

REMARKS

The rejection of Claims 1-3 under 35 U.S.C. §102(b) as anticipated by U.S. 3,021,195 (Podschus et al), is respectfully traversed.

As recited in Claim 1 herein, an embodiment of the present invention is a dehydroxylated aluminium silicate-based material, wherein the amount of reacted calcium hydroxide, measured by the pozzolanic reactivity (PR) after a 3-day cure is at least 50%. Applicants have discovered that the claimed dehydroxylated aluminium silicate-based material can be obtained by dehydroxylation treatment of aluminium silicate, in which particles containing aluminium silicate are exposed to a temperature of at least 500°C, wherein the particles are in the form of a dry powder, and the dry powder is transported in a gas stream **at a temperature ranging from 600-850°C, for a time which is sufficient to achieve the desired degree of dehydroxylation.** (emphasis added)

Podschus et al is drawn to the removal of bound water or water of hydration of solid, essentially water-insoluble natural pulverulent silicates such as aluminosilicates (column 1, lines 10-13). Podschus et al discloses further that bound water may be effectively removed by introducing the pulverulent material into a highly turbulent upwardly rising stream of hot gas (column 1, lines 19-22). This may be conducted by establishing a circularly flowing or whirling upwardly rising stream of gas in the form of a vortex, the silicate material being introduced into the central area of the vortex, wherein the average residence time undergoing treatment in the vortex or the like is only a matter of a few seconds, usually less than 5 seconds, rarely more than 1 or 2 seconds, and frequently less than this period, and wherein the material is heated to the dehydrating temperature (column 1, lines 23-31). Podschus et al discloses specifically that kaolin is transformed into the X-ray amorphous metakaolin at a temperature between 400 and 800°C (column 2, lines 29-32).

The Examiner particularly relies on Examples 1 and 5 therein, which each exemplify the treatment of kaolin. In Example 1, the kaolin in dust form is injected into the upper end of a downwardly tapering conical heating chamber, and after a stay of about 1 second, kaolin particles are deposited in a cyclone where they are precipitated within an average time of only a few (less than 5) seconds from the time when they were introduced into the heating chamber (column 2, line 64 to column 3, line 24). The Table bridging columns 3 and 4 shows various properties for untreated kaolin and kaolin treated at a temperature ranging from 600 to 900°C. Example 5 is similar to Example 1, except that the temperatures are 680°C and 730°C, respectively, and the average length of stay of the kaolin particles in the heating chamber is about 1/10 second (column 6, line 34 ff.)

The Examiner finds, in effect, that the metakaolin produced by the process of Podschus et al would inherently meet the terms of the present claims, in view of the overlap, in effect, of heating temperatures disclosed and exemplified therein, and the temperature range disclosed herein.

In reply, as emphasized above, both the temperature and the time are controlled in order to achieve the desired degree of dehydroxylation. In Podschus et al, the time is always extremely short, i.e., no longer than a few seconds, at best. As disclosed in the specification herein at the paragraph bridging pages 6 and 7, in general, the higher the temperature, the shorter the time, and vice-versa. In addition, Applicant's process requires drying of the particles prior to transporting the dry particles in a gas stream for the requisite amount of time and at the appropriate temperature for achieving the desired degree of dehydroxylation. In Podschus et al, the starting kaolin is not disclosed as having been at all dried prior to subjecting it to the highly turbulent upwardly rising stream of hot gas.

Applicants appreciate that a product made by a process different from that of the prior art does not automatically make the product patentable. However, there are sufficient

Application No. 10/644,881
Reply to Office Action dated April 12, 2007

differences between Applicants' process and the process disclosed by Podschus et al, as discussed above, to negate any finding that the product of Podschus et al is inherently the same of the presently-claimed product.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-3 under 35 U.S.C. §102(b) as anticipated by U.S. 4,994,114 (Thiery et al), is respectfully traversed.

Thiery et al discloses a method for selecting a pozzolan intended to be incorporated into a composite material comprising cement and glass. Particularly, Thiery et al discloses selecting a pozzolan, such as a metakaolin, which exhibits a capacity for fixing lime during the 90°C Chapelle test of greater than 700 mg of CaO per gram of pozzolan; a capacity for fixing lime during the 50°C Chapelle test of greater than 200 mg of CaO per gram of pozzolan; and a ratio of the quantity of lime absorbed per gram of pozzolan during the 50°C Chapelle test to the specific surface area of the pozzolan which is greater than about 10 mg of CaO per square meter of pozzolan and preferably greater than 12 mg of CaO per square meter of pozzolan. (column 2, lines 55-65). The Examiner finds that Examples 1 and 2 of Table II disclose metakaolins having a Chapelle reactivity of greater than 0.77, and that while Thiery et al does not explicitly disclose PR, i.e., pozzolanic reactivity, "a Chapelle reactivity that high would be expected to translate to a PR at least as great as the instant claims."

In reply, it is not clear what the basis is for the Examiner's find of a Chapelle reactivity for said Examples 1 and 2. Nevertheless, data in the specification herein at Table 1 show that a high Chapelle test value does not translate into a high PR. A copy of Table 1 appears below:

	3-day reactivity PR (%)	7-day reactivity PR (%)	Chapelle Test Value (mg CaO/g MK)
Kaolin A calcined according to the invention	62	94	746
Kaolin A calcined according to a static calcination process	30	86	710
Metakaolin B	19	82	785
Metakaolin C	0	29	397
Metakaolin D	21	25	269
Metakaolin E	39	91	828

Table 1

The commercial metakaolin studied are:

Metakaolin B: Metastar 501 from IMERYS

Metakaolin C: Polestar 400 from IMERYS

Metakaolin D: Glomax LL from IMERYS

Metakaolin E: Metamax from ENGELHARD

The data in Table 1 shows that there is **no** correlation between PR and Chapelle test value. Indeed, the metakaolin calcined according to the invention has a higher early-age PR than the metakaolins having the highest Chapelle values, i.e., the highest pozzolanic reactivity potential. Compare to the data for metakaolin B and metakaolin E.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The objection to Claims 4 and 5 as being improper multiply dependent claims is now moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that the objection be withdrawn.

Application No. 10/644,881
Reply to Office Action dated April 12, 2007

Applicants respectfully submit that all of the presently-active claims in this application are now in immediate condition for allowance. The Examiner is respectfully requested to rejoin non-elected process claims of even scope, and in the absence of further grounds of rejection, pass this application to issue with all active and rejoined claims.

Respectfully submitted,

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